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ABSTRACT

Technical writing instructors at Drexel University (Pennsylvania) use computers to excite students about something they usually regard as a chore. Most of the students are engineering majors, but do not necessarily know how to use a computer. However, they accept the necessity of following a logical set of commands, and that every program must be "debugged." The course makes revision as integral to writing as debugging is to programing. The course still emphasizes attention to audience and use of visuals, as well as rhetoric, but access to a word processing lab encourages students to revise and make corrections on a screen that they might be reluctant to make on a typewritten page. The system also has an automated dictionary, that seeks out misspelled words in the text. The software automatically sets up document formats so students need not be concerned with margins, tabs, centering, or the psychological defeat of a blank page. In a traditional class, students find themselves spending so much time recopying some parts of their papers that they have little motivation to critically read and revise what they have written. For engineering students who typically write weekly lab reports, progress reports, or proposals, updated versions can be generated by the word processing program without rewriting the whole report, and documentation for research projects can be stored, and arranged in a variety of ways. (HTH)

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The Computer Kids and Composition

Kids today, my own included, are more comfortable with electronics than their parents. They stand for hours in arcades where, in the eerie light they try to beat their own score and move their men on graphic terminals rather than ponder hours over a chess board. They are perfecting their hand and eye coordination though they have no idea they are educating themselves. "A student who is unwilling to practice repeated pen movement patterns (to improve handwriting) will gladly spend several weeks' allowance to practice repeated joystick motions to master the latest space game." ("Computers and Society," David D. Thornburg, COMPUTE! Apr. 1982 No. 23, p. 18). The excitement of learning which children exhibit before first grade has somehow surfaced in the selfmotivation which computers inspire.

Kids are not only playing with computers, they are developing their own software and making huge profits selling their games for home computers. According to MONEY magazine, kids from ages 12 to 18 have companies grossing a million dollars a year. "The microteens find a ready market for their programs among established computer companies, which have traditionally welcomed the services of raw college graduates, who are dubbed microkids by their older colleagues." (March 1982, "Here Come the Microteens," Marlys Harris, pp. 67-68)

Obviously the kids are excited about computers and knowledgeable enough to handle them. We should let the kids lead us to ways to educate them that

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are enlighted by their own expertise. We don't have to be able to program a computer to teach a student how to write on one. We do have to be willing to experiment with new ways of teaching. The reward is breaking down the barrier that schools have erected between education and kids' inherent excitement about learning. "If students are intrinsically motivated to learn something, they are likely to spend more time and effort learning, feel better about what they learn, and be more likely to use it in the future." (Thomas W. Malone, "What Makes Things Fun to Learn? A Study of Intrinsically Motivating Computer Games," Pipeline, 6 (fall 1981) 50)

My concern has been to introduce the use of a computer in a technical writing course to excite the students about something they regard usually as a chore. Most of the students are in engineering, but they do not necessarily know how to use the computer. However, they are fascinated by computer games and familiar with pushing buttons in a sequence to play PAC-MAN, Space Invaders etc. They accept the necessity of following a logical set of commands--no "You knows" to fill in the blanks--every step must be clearly spelled out for a computer to function. In doing their own programming, the students accept the fact that they will not write an error-free program on the first try. Even students who haven't had programming know, all programs have to be debugged. Why not revised? All writing has to be revised. Any professional writer expects to revise; students expect to write it once, hand it in, and get an A. Revising means erasing, scratching out, cutting and pasting; revising means a big confusing mess of words (many misspelled). If we could make revision as integral to writing as debugging is to programming, we could improve the quality of student writing. And using the computer offers the advantage of recapturing the excitement of learning.

We must still teach the fundamentals of technical writing--attention to audience, use of visuals, as well as rhetoric, but at Drexel we have added a word processing lab to encourage and facilitate student writing. The student response has been overwhelmingly positive. I have found their enthusiasm generates an excitement about writing that is most unlike the typical engineer's. I use the lecture time to cover the traditional course content and the lab time to introduce AFCAD which is our word processing software, and to confer individually with each student at his terminal. I asked my experimental class to discuss their response to using the computer for writing.

> Jacob -- My typing skills are not that great, I employ the basic hunt and peck method, but the use of the CRT has cut typing time almost in half because minor typing errors are corrected simply by deleting or changing misspelled words. I feel that not being a typist does not hinder my use of the AFCAD system . . . The fact that I have the ability to store my documents and make changes that I have want to or those suggested by the instructor enables me to improve the quality of my writing. This is because I am more likely to alter a document that is stored on a computer (disk) rather than ruin a typed page by changing one word or phrase. The AFCAD then, allows no room <u>for laziness</u> because of the ability to correct and improve my writing style at the push of a few buttons.

For the particulars of our set-up

Our main computer, a PRIME 750, can accommodate 90 terminals in an interactive mode. Each terminal has a regular keyboard with additional special function keys. Because corrections are so easy to make, typing skills are not necessary. For example inserting a forgotten character involves hitting the special function key <u>char. insert</u> and then the necessary character. Removing a character involves either typing right over an incorrect character on hitting <u>char. delete</u>. Similar functions can be applied to lines and paragraphs.

(Parenthetically, a dedicated word processor is the easiest machine to use but the most expensive. If you are starting from scratch, micros and minis,

are economical, but if the school already owns a large computer, the cheapest approach is to buy word processing spsoftware for it, even though it a little more complicated to use. The large computer offers students and teachers several advantages. Students can use the computer to perform their calculations and manipulate their research data. The teacher can use the computer's capability for interaction with electronic mail to send messages, reminders of due dates, comment on texts, respond to questions or use the well developed programs in Computer Aided Instruction to help specific students with grammar problems. There are also programs which could be used selectively to analyze writing style, FOG INDEX, typical sentence length. More creative programs such as those developed by Hugh Burns, stimulate invention by asking open-ended questions which help students define and narrow a topic--these I believe, could be adapted to technical writing to help students define audience and purpose. Such a range actually makes the course more personal, leading to individualized instruction.

Our system also has an automated dictionary, called SPELL. Based on student response, SPELL is akin to PAC MAN FEVER. I have found students invoking SPELL on everything from letters to distant girl friends to their FORTRAN programs. These are the same engineering majors who would never bother to flip through the pages of the OED. However, they gleefully invoke SPELL and watch the cursor move through the text until it stops to flash at a misspelled word. They freely consult one another for corrections or even invoke another special function key that lists possible spellings for several troublesome words. As an added benefit, as they follow the cursor to check spelling, they are also re-reading the text. As one student discovered, that means more possibility for substantive as well as cosmetic revision:

Tony -- Prior to using this system, I would write a paper, make corrections and proofread it once or maybe twice. Now I still hand write a first draft and correct it somewhat, but I correct again while I type. After having a copy on file I proofread to check for typing errors, but I'm also reviewing content and the flow of the paper. My next step is to check my spelling. This results in another reading as I follow the cursor to its various stops. Finally someone else is asked to read it and give criticism without fearing that the change is not worth the trouble of retyping. All these extra checks result in a better final product.

But the computer does more than make revision easy, or actually enjoyable. Freeing the student from the drudgery of recopying, the computer also frees him from the horror of the blank page. Students have found they are less inhibited to begin writing:

Marcia -- Using AFCAD for a writing tool greatly increases my motivation for doing the writing assignment . . . Previously, I would sit in front of a blank piece of paper and stare at it until finally I thought of something to write . . . As a result of AFCAD I am no longer inhibited to write.

Our soreware automatically formats documents so students need not be concerned with margins, tabbing, or even a table of contents. The system prompts a student on a letter, for example, to type the heading. After the text is entered, it prompts him to type the salutation. And so for each part, the student is responsible only for the text, the program will print the letter correctly formatted in a neat block. Similar formats for resumes and reports, inspired Chris's response:

Chris -- Word processing makes writing both easier and more enjoyable. Too many times I am plagued by the little, picky facets of writing. Spacing, text alignment, spelling, text revisions, and margin and tab setting are all handled by AFCAD, leaving more time for me, the writer, to concentrate on the actual body of the document. Using AFCAD I find myself more inclined towards writing. I am a Computer Science major, so any subject having to do with computers interests me. I never liked writing, but with the introduction of AFCAD, I enjoy composing papers, letters, and memos at the terminal.

Typically, engineering students write weekly lab reports, document research projects, and in Drexel's year long Senior Design sequence, they write a proposal, progress reports and a final report. The lab reports are often solutions to the same class of problems using different parameters or different solution tech-

niques. With a word processing program, updated versions can be easily generated without re-writing the whole report. Documentation for research projects can be stored in the program and formatted in various ways. Repeated sections in the Senior Design papers can be stored and the successive, multiple revisions demanded by the two or three engineering advisors and the technical writing professor can be achieved efficiently. In a traditional class, students find themselves spending so much time recopying some parts of their papers that they have little motivation to spend time at the important task of critically reading and then revising what they have written. The traditional approach in technical writing teaches students rhetoric which they have been learning since grade school; if knowledge of rhetoric were all students needed to write well, their writing should have improved years ago. The computer can offer students in writing the kind of tool that they can appreciate:

> John - "The Word Processor-A Writing Tool" -- Ever since I started using the word processor, I have become more and more confident of my writing ability. Anxiety over having an assignment finished on time, and concern over whether or not I could have done a better job on an assignment are virtually gone. Ease of change, revision, and correction allow me to try almost any combination of styles in my writing without having to worry about wasting too much time . . .
>
> Saving time might be considered valuable to a student in technical writing, but to someone in business or industry, time is money. Just think about the impact that the word processor could have on all levels of employemnt from the business executive who just can't wait for his/her secretary to get to his report to the engineer who isn't quite sure how he wants his one million dollar proposal worded . . .

Sudden interest in using computers to teach writing has inspired the February issue of College English to include an excellent article if you are wondering where to begin. Helen J. Schwartz in Monsters and Mentors: Computer Applications for Humanistic Education provides a bibliography and a list of pertinent questions to get you started. A more general, but thought provoking book is the Computer in the School Tutor, Toot, Tutee published by Columbia University Teachers College Press in 1980.

I encourage you to consider using computers--you don't have to be able to program them; you have to be willing to experience the joy of learning something new in class My experience is that making writing electronic gives students a feeling of power--the power of words in harmony with the power of the computer. We can harnass that power for better communication.

Thomas E. Roden, Associate Administrator, Arkansas Methodist Hospital, on Writing Skills of Engineers -- in response to Philadelphia Magazine special issue on education "Unfortunately, it has been my experience with technical grads (sic) that most of them cannot put together a correct grammatical sentence; they cannot communicate their thoughts in the simplest of formats, either written or verbal; they think Chekhov is for union dues, and Modigliani an Italian racing car.

We have to have the technical grads; to be sure. They perform essential services for us, and in doing so, become highly paid servants. What I have seen lacking, however, is an emotional and intellectual sophistication that adds richness and color to their lives, and to the lives of those around them. They are, in a word, boring!"